

EDUCATION

Purdue University M.S. and Ph.D. in Computer Science, GPA 3.94/4.00	West Lafayette, IN August 2020 - Present
University of California, San Diego M.S. in Electrical and Computer Engineering	La Jolla, CA September 2018 - March 2020
Beijing University of Posts and Telecommunications B.E. Internet of Things Engineering	Beijing, China August 2014 - June 2018
Queen Mary University of London B.E. Internet of Things Engineering	London, UK August 2014 - June 2018

SYSTEMS & PROGRAMMING SKILLS

- Languages: Python, Go, Java, Bash, C/C++, P4, Matlab, HTTP/CSS and SQL/NoSQL
- Technologies: Kubernetes, Docker, Ansible, Helm, MongoDB, Git, gRPC, RESTful API, Prometheus, Grafana, Network System, Cloud Computing, Distributed System, Mobile Network, Mobile Computing, CMake, SDN, Mininet, Wireshark

SELECTED AWARDS AND RECOGNITIONS

- **2022 Meta PhD Research Fellowship Finalist**
- 2022 Intel Intern Recognition
- Beijing University of Posts and Telecommunications Scholarship for Undergraduate Education (2015–2017)

WORK EXPERIENCE

Intel Corporation Research Scientist Intern	Hillsboro, OR May 2023 – September 2023
<ul style="list-style-type: none">– Profiled and optimized a distributed, stateless microservice-based cloud-native application, Intel Aether SD-Core project, which is a microservice-oriented 5G mobile core built with Go, and its deployment is orchestrated with Kubernetes.– Identified bottlenecks of the user-observed end-to-end latency of high execution time of serialization/deserialization and high read/write IO between the application and database using Go pprof.– Added Redis support to reduce the data access latency up to $\sim 75\%$ compared to previous MongoDB solution.– Identified the bottleneck in load balancer, HTTP marshaller/unmarshaller and Go scheduler under large-scale users in the adapter between the control plane and data plane and reported to the Intel team for further optimization.– This work is featured in the Intel Labs Intern Lightning talk.	
Intel Corporation Research Scientist Intern	Hillsboro, OR May 2022 – August 2022
<ul style="list-style-type: none">– Developed stateless microservices and related features in Intel Aether SD-Core using Go to provide high availability and scalability while ensuring resource usage efficiency and low user-observed end-to-end latency. [2, 3]– Designed and implemented a microservice using Go to connect to multiple control plane microservices with HTTP interfaces, and the data plane with a PFCP interface.– Developed high availability features for the stateless microservices using Go and MongoDB, including load balancer, keep-alive to ensure user requests can be handled under microservices failure.– Designed auto-horizontal Kubernetes pod scaling mechanism to reduce user observed end-to-end latency by $\sim 50\%$.– This work has been open-sourced, launched in production by Intel, and field-tested by Deutsche Telekom.	
Purdue University Graduate Research Assistant	West Lafayette, IN January 2021 – Present
<ul style="list-style-type: none">– Profiled and analyzed the system workload of stateful Intel Aether SD-Core. Deployment and profiling tools include Python, Ansible, Kubespray, RKE2, Helm, Prometheus, Grafana, Go pprof, Open telemetry and etc. [2, 3, 4]– Pinpointed latency bottleneck of the Intel Aether SD-Core in high execution time of message serialization/deserialization (up to $\sim 60\%$) and high contention time for resources of 5G mobile core microservices (up to $\sim 70\%$).– Intel Aether SD-core project has adopted and open-sourced our development and debugging effort.– One first-author paper in submission.	

Intel Corporation
Research Scientist Intern

Hillsboro, OR
May 2021 – August 2021

- Implemented in-network ML aggregation and Map/Reduce operations on programmable data planes to reduce training and inference latency in distributed machine learning using **P4**, **Python**, **Bash** and **BMV2**.
- This work reduced the network latency by $\sim 4\times$, and saved the network bandwidth by $\sim 3\times$.
- This work has been merged into Intel Labs repo for further technology transfer.

University of California, San Diego
Research Assistant

La Jolla, CA
Sep 2018 – Mar 2020

- Implement and evaluate vehicle-to-everything (V2X) communication over millimeter-wave network use case for 5G New Radio use case using mmWave access points **Airfide Sparow+**, **Matlab**, **Python** and **Bash**. Profiling results guide the mmWave beamforming management mechanisms and interference cancellation. [5]
- Designed and developed X-Array for prototyping and evaluating omnidirectional millimeter-wave (mmWave) network using mmWave access points **Airfide Sparow+**, **Matlab**, **Python**, and **Bash**. [6]

Beijing University of Posts and Telecommunications
Research Assistant

Beijing, China
Jan 2017 – Jun 2018

- Designed and developed KPad [8], a system to increase channel utilization in Wi-Fi MU-MIMO.
- Developed Romil [7, 9] for robust indoor mmWave communication.

PUBLICATIONS

Conference and Workshop Papers

1. **Jingqi Huang**, Bilal Saleem, Jiayi Meng, Iftexharul Alam, Christian Maciocco, Y. Charlie Hu, and Muhammad Shahbaz. Towards a performant and scalable cloud-native 5g mobile core architecture. In **SRC TECHCON**, 2023
2. **Jingqi Huang**, Jiayi Meng, Iftexharul Alam, Christian Maciocco, Y. Charlie Hu, and Muhammad Shahbaz. Accelerating 5g (mobile core) control plane using p4. In **P4 Workshop**, 2022
3. Jiayi Meng, **Jingqi Huang**, Y Charlie Hu, Yaron Koral, Xiaojun Lin, Muhammad Shahbaz, and Abhigyan Sharma. Characterizing and modeling control-plane traffic for mobile core network. In **ACM Internet Measurement Conference (IMC)**, 2023
4. Haotian Deng, Qianru Li, **Jingqi Huang**, and Chunyi Peng. iCellSpeed: Increasing Cellular Data Speed with Device-Assisted Cell Selection. In **ACM MobiCom**, 2020
5. Song Wang*, **Jingqi Huang***, and Xinyu Zhang. Demystifying Millimeter-Wave V2X: Towards Robust and Efficient Directional Connectivity Under High Mobility. In **ACM MobiCom**, 2020. (*Equal contribution)
6. Song Wang*, **Jingqi Huang***, Xinyu Zhang, Hyoil Kim, and Sujit Dey. X-array: Approximating Omnidirectional Millimeter-Wave Coverage Using an Array of Phased Arrays. In **ACM MobiCom**, 2020. (*Equal contribution)
7. Anfu Zhou, Shaoqing Xu, Song Wang, Jingqi Huang, Shaoyuan Yang, Teng Wei, Xinyu Zhang, and Huadong Ma. Robot Navigation in Radio Beam Space: Leveraging Robotic Intelligence for Seamless mmWave Network Coverage. In **ACM MobiHoc**, 2019
8. Song Wang*, **Jingqi Huang***, and Anfu Zhou. KPad: Maximizing Channel Utilization for MU-MIMO Systems Using Knapsack Padding. In **IEEE ICC**, 2018. (*Equal contribution)

Journal Articles

9. Anfu Zhou, Shaoqing Xu, Song Wang, **Jingqi Huang**, Shaoyuan Yang, Teng Wei, Xinyu Zhang, and Huadong Ma. Robotic Millimeter-Wave Wireless Networks. **IEEE/ACM Transactions on Networking**, 28(4):1534–1549, 2020

CORE CURRICULUM

- **Ph.D.:** Data Communication And Computer Networks, Database Systems, Distributed Database Systems, Algorithm Design Analysis & Implementation, Data Mining, Statistical Machine Learning
- **Master:** Software Foundations I, Linear Algebra and Application, Multi User Communication system, Digital Communications, Principles of Wireless Networks, Probabilistic Coding, Special Topic in Signal & Image/Robotic, Big Network Data
- **Undergraduate:** Operating System, Cloud Computing, Databases, Software Engineering, Data Structure, Introductory Java Programming, Signals and Systems, Product Development, Network and Protocols, Security and Authentication, Middleware